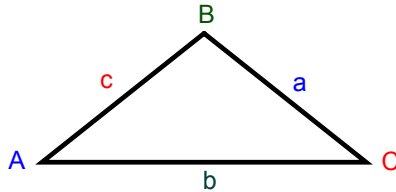PC Sec 5.5 Law of Sines   You need a calculator for this section !

So far, to solve a triangle it needed to be a right triangle.
But what if your triangle is not right?

Well there is an app for that... not really but there is a formula
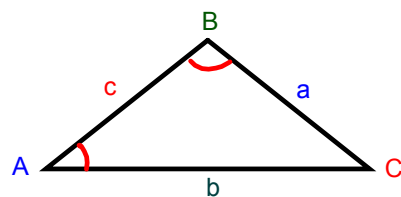which works great.

$A + B + C = 180$

Introducing the Law of Sines

$$\frac{\sin A}{a} = \frac{\sin B}{b} = \frac{\sin C}{c}$$

This method can only be used if given:

* 2 angles and a side (AAS)

* 2 angles and the included side (ASA)

** Special case: 2 sides and an angle (SSA)

1

example: Solve the triangle, given <A = 36°, <C = 48°, a = 8

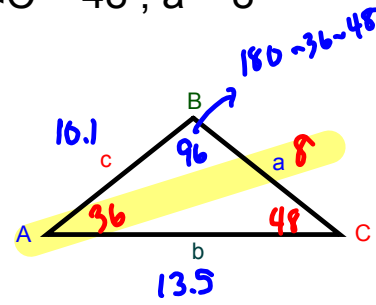Find: B = __96__ , c = __10.1__, b = __13.5__

$$\frac{\sin 36}{8} \rightarrow \frac{\sin 96}{b}$$

$$\frac{b \sin 36}{\sin 36} = \frac{8 \sin 96}{\sin 36}$$

$$b = \frac{8 \sin 96}{\sin 36} = 13.5$$

$$\frac{\sin 36}{8} = \frac{\sin 48}{c}$$

$$c = \frac{8 \sin 48}{\sin 36} = 10.1$$

180 - 36 - 48

B
10.1   c   96   a   8
A   36   48   C
b
13.5

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ex. Solve the triangle given: B = 70°, b = 14, c = 9

Find A = __73__ , C = __37__ , a = __14.2__

$$\frac{\sin 70}{14} = \frac{\sin C}{9}$$
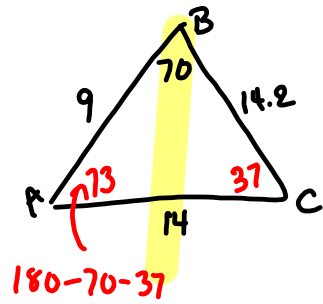
$$\frac{14 \sin C}{14} = \frac{9 \sin 70}{14}$$

$$\sin C = \frac{9 \sin 70}{14}$$

$$C \doteq 37°$$

$$\frac{\sin 70}{14} = \frac{\sin 73}{a}$$

$$a = \frac{14 \sin 73}{\sin 70}$$

$$a = 14.2$$

180 - 70 - 37

Assignment
MML Sec 5.5 day 1

B
70
9   14.2
A   73   37   C
14

2